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What is claimed is:

- 5 1. A composition for the treatment of metal surfaces, comprising
- 10 a) at least one polymer as component A, composed of
- aa) at least one amino-containing polymer as component Aa;
- ab) at least one aromatic compound as component Ab, being a phenol or quinone
 or containing a phenolic or quinonoid structural unit;
- ac) if desired, an aldehyde as component Ac;
- 15 b) water or another solvent suitable for dissolving, dispersing, suspending or
 emulsifying the polymer (component A), as component B;
- c) if desired, surface-active compounds, dispersants, suspension media and/or
 emulsifiers as component C.
- 20 2. A composition for the deposition of metal or metal alloys on plastics surfaces,
 comprising:
- 25 a) at least one polymer as component A, composed of
- aa) at least one amino-containing polymer as component Aa;
- ab) at least one aromatic compound as component Ab, being a phenol or quinone
 or containing a phenolic or quinonoid structural unit;
- ac) if desired, an aldehyde as component Ac;
- 30 b) water or another solvent suitable for dissolving, dispersing, suspending or
 emulsifying the polymer (component A), as component B;
- c) if desired, surface-active compounds, dispersants, suspension media and/or
 emulsifiers as component C.
- 35 3. A composition as claimed in claim 1, comprising further to components A, B and,
 where appropriate, C

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- d) at least one salt, acid or base based on transition metal cations, transition metal oxo anions, fluorometallates or lanthanoids as component D,
and/or
- 5 e) at least one acid selected from the group consisting of phosphoric acid, sulfuric acid, sulfonic acids, nitric acid, hydrofluoric acid, and hydrochloric acid, as component E,
and/or
- 10 f) at least one further corrosion inhibitor as component F,
and/or
- g) compounds of Ce, Ni, Co, V, Fe, Zn, Zr, Ca, Mn, Mo, W, Cr and/or Bi as component G,
and/or
- 15 h) further auxiliaries and additives as component H.
- 15 4. A composition as claimed in claim 1 or 2, comprising further to components A, B and, where appropriate, C:
- i) at least one metal oxide and/or metal salt as component I,
j) where appropriate, at least one complexing agent as component J,
- 20 k) where appropriate, at least one acid or an alkali metal salt or alkaline earth metal salt of the corresponding acid, as component K, and
l) where appropriate, further additions as component L.
5. A process for the treatment of a metal surface, which comprises contacting the metal surface with a polymer (component A) composed of
- 25 aa) at least one amino-containing polymer as component Aa,
ab) at least one aromatic compound as component Ab, being a phenol or quinone or containing a phenolic or quinonoid structural unit, and
ac) if desired, an aldehyde as component Ac.
- 30 6. A process as claimed in claim 5, wherein the metal surface is contacted with a composition as claimed in either of claims 1 and 3.
7. A process as claimed in claim 6, comprising the steps of:
- 35 a) where appropriate, cleaning the metal surface to remove oils, fats, and dirt,
b) where appropriate, washing with water,

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- c) where appropriate, pickling to remove rust or other oxides, in the presence or absence of the polymer (component A) used in accordance with the invention,
 - d) where appropriate, washing with water,
 - 5 e) treatment of the metal surface in the presence of the polymer (component A) used in accordance with the invention,
 - f) where appropriate, washing with water,
 - g) where appropriate, aftertreatment, in the presence or absence of the polymer (component A) used in accordance with the invention.
- 10 8. A process as claimed in claim 5, wherein the metal surface is contacted with a composition as claimed in claim 2 or 4.
- 15 9. A process for the deposition of metals or metal alloys on a plastics surface, which comprises contacting the plastics surface with a polymer (component A) composed of
 - aa) at least one amino-containing polymer as component Aa,
 - ab) at least one aromatic compound as component Ab, being a phenol or quinone or containing a phenolic or quinonoid structural unit, and
 - 20 ac) if desired, an aldehyde as component Ac.
10. A process as claimed in claim 9, wherein the plastics surface is contacted with a composition as claimed in claim 2 or 4.
- 25 11. A process as claimed in claim 8 or 10, wherein chemical or electrochemical metal deposition is carried out.
12. The use of polymers composed of
 - aa) at least one amino-containing polymer as component Aa,
 - 30 ab) at least one aromatic compound as component Ab, being a phenol or quinone or containing a phenolic or quinonoid structural unit, and
 - ac) if desired, an aldehyde as component Acfor the treatment of metal surfaces.
- 35 13. The use of polymers composed of
 - aa) at least one amino-containing polymer as component Aa,

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- 5 ab) at least one aromatic compound as component Ab, being a phenol or quinone or containing a phenolic or quinonoid structural unit, and
 ac) if desired, an aldehyde as component Ac
 for the deposition of metals or metal alloys on a plastics surface.

- 10 14. A polymer composed of
 a) at least one polymer or copolymer composed of at least one repeating unit selected from the group consisting of vinylamine, vinylformamide and lysine, as component A'a,
 b) benzoquinone, phenol or pyrocatechol as component A'b, and
 c) where appropriate, an aldehyde as component A'c.